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**PLATTSBURGH AIR FORCE BASE SUPERFUND SITE  
PLATTSBURGH, CLINTON COUNTY, NEW YORK**

**INTERIM REMEDIAL ACTION REPORT**

**FIRE TRAINING AREA (SITE FT-002) SOURCE  
(OPERABLE UNIT 5)**

**September 2004**

Morse

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION II

DATE: SEP 30 2004

SUBJECT: Approval of the Interim Remedial Action Report for Operable Unit 5 at Plattsburgh Air Force Base, Plattsburgh, Clinton County, New York

FROM: John S. Malleck, Chief  
Federal Facilities Section

TO: Robert Vaughn, Chief  
Special Projects Branch

Attached for your approval is the Interim Remedial Action Report, documenting the completion of remedial action construction at Operable Unit 5 at the Plattsburgh Air Force Base Superfund Site, Plattsburgh, Clinton County, New York.

Please denote your approval of the subject document by signing below.

Attachment

Approved:

RF Vaughn

Robert Vaughn, Chief  
Special Projects Branch

9/30/04  
Date



**DEPARTMENT OF THE AIR FORCE**  
**AIR FORCE REAL PROPERTY AGENCY**



September 28, 2004

**MEMORANDUM FOR USEPA, REGION 2**

**ATTN: MR. ROBERT MORSE**  
Federal Facilities Section  
290 Broadway, 18th Floor  
New York NY 10007-1866

**FROM: AFRPA/DA Plattsburgh**  
304 New York Road  
Plattsburgh NY 12903

**SUBJECT: Completion of Remedial Action Construction at IRP Site FT-002, Former Fire Training Area, Source Operable Unit**

This is to confirm our discussions regarding the status of the remedy implementation at IRP Site FT-002, Former Fire Training Area, Source Operable Unit. Construction of the remedy for the Source Operable Unit was completed on December 15, 2003; operation of the constructed remedy was initiated on January 12, 2004.

Our point of contact is Dave Farnsworth at (518) 563-2871, extension 15.

**MICHAEL D. SORREL, PE**  
Site Manager/BRAC Environmental Coordinator

**cc:**  
NYSDEC (Mr. James Lister)

## **I. INTRODUCTION**

This document presents the Interim Remedial Action Report (RAR) for the remedy that addresses the source operable unit at the Fire Training Area (Site FT-002) at Plattsburgh Air Force Base (PAFB), in Plattsburgh, New York. This component of the FT-002 remedy is also referred to as Operable Unit 5 or OU 5.

This report is consistent with the requirements of the Environmental Protection Agency (EPA) guidance documents entitled, "Remedial Action Report Documentation for Operable Unit Completion (June 1992)," and "Closeout Procedures for National Priorities List Sites (OSWER Directive 9320.2-09A-P, PB98-963223, January 2000)." This RAR was developed by EPA, based in part on information provided by the Air Force.

### **Site Description**

Plattsburgh AFB, located in Clinton County in northeastern New York State, is bordered on the north by the City of Plattsburgh, the south by the Salmon River, on the west by Interstate 87, and on the east by Lake Champlain. The base is approximately 26 miles south of the Canadian border and 167 miles north of Albany. Lands to the east, west, and south of the base are predominantly rural and residential. Approximately 2,000 people obtain drinking water from private wells located within 3 miles of the base.

Site FT-002, located near the central western boundary of the facility, consisted of four fire training pits, each 50 to 100 feet in diameter, centered within an approximately 8 acre area. Several landfills and a small arms range utilized by the base lie in close proximity to the site. This area of the base has been designated for future industrial use in the base reuse plan.

### **Site History**

PAFB served as a tactical (bombardment and air refueling) wing in the Air Force Strategic Air Command (SAC) from 1955 to 1991. In 1991, the bombardment wing was removed and in 1992 operations were realigned to form the 380th Air Refueling Wing under the Air Mobility Command (AMC). PAFB was slated for closure in 1993 under the Defense Base Closure and Realignment Act (BRAC), and the base was closed on September 30, 1995. Reuse of PAFB is being administered by the Air Force Real Property Agency (AFRPA) in conjunction with the Plattsburgh Airbase Redevelopment Corporation (PARC) and the Clinton County Industrial Development Agency (CCIDA).

Under the National Contingency Plan and Executive Order 12580, the Air Force has been a delegated lead agency responsible for CERCLA actions on its facilities. The Air Force has conducted environmental investigations at PAFB since the early 1980s. The Installation Restoration Program (IRP) at PAFB, which involves investigation and cleanup under CERCLA, currently includes a total of forty-one sites at various stages of investigation and/or cleanup. The

IRP is being implemented according to a Federal Facilities Agreement (Docket No.: II-CERCLA-FFA-10201) signed between the Air Force, EPA, and the New York State Department of Environmental Conservation (NYSDEC) on July 10, 1991. Joint selection of remedies by federal agencies and EPA at Federal Superfund sites is required by CERCLA Section 120. The State of New York provides written concurrence on the Records of Decision (RODs). PAFB was placed on the National Priorities List (NPL) on July 10, 1989.

The fire training pits at site FT-002 were utilized from 1959 until they were closed in 1989. During training exercises, base firefighters saturated the pits with water, and then poured in off-specification jet fuel mixed with waste solvents, and ignited the mixture.

In 1984-85, a preliminary assessment (PA) consisting primarily of a records search was conducted at FT-002. Based upon the results of the PA, a site inspection (SI) was conducted in 1987 (E.C. Jordan 1989). The SI included a soil gas survey, geophysical surveys, soil sampling, and the installation and sampling of groundwater monitoring wells. The study confirmed the presence of fuel-related compounds and solvents in the subsurface soil. In addition, free product was detected floating on the water table surface. From 1988 to 1993, a multi-phased remedial investigation (RI) was undertaken for the FT-002 site (ABB-ES & URS 1993). The comprehensive study determined the vertical and horizontal extent of soil contamination and identified an approximately 1-mile long groundwater plume trending east-southeastward from the site.

In 1990, an Engineering Evaluation/Cost Analysis (EE/CA) was prepared to evaluate alternatives for the recovery of free floating (pumpable) product from FT-002 (E.C. Jordan 1990). Based on EE/CA results, a removal action was implemented by the USAF to recover free product. This involved installation of four recovery wells, four dual product/groundwater extraction pumps, and treatment of recovered groundwater prior to discharge to a tributary of the Salmon River. System construction began in June 1992 and the system went on-line in 1993. In the summer of 1996, the system was upgraded to include nine new recovery wells, new product recovery pumps, new groundwater extraction pumps, and upgraded treatment equipment for the groundwater treatment plant. In 1995, a Feasibility Study (FS) was conducted for the Source OU which included a detailed evaluation and comparison of nine alternatives based on USEPA criteria related to the effectiveness, implementability, and cost of the alternatives (URS 1995).

In 1996, an Action Memorandum was prepared which included a recommendation and conceptual design for a second removal action to address contaminated soil (Parsons & OHM 1996). Components of the removal action were as follows:

- Implement a Soil Vapor Extraction (SVE) system in the vicinity of Pit 1 to remove chlorinated hydrocarbons from soils in that area, with a catalytic oxidizer to destroy vapors from the SVE system.
- Biovent all contaminated soils to remove all other contaminants of concern.

- Pump groundwater to depress the water table so soils and residual product in the zone of water table fluctuation were exposed and treatable by SVE and bioventing.

Soil Vapor Extraction (SVE), Bioventing, and water table depression systems for the 2<sup>nd</sup> removal action were designed and constructed and operation began in 1998.

An additional surface and near surface soil sampling program was implemented in 1998 (URS 1998) for copper and lead, which had been found to have potential adverse effects on ecological receptors identified in the Ecological Risk Assessment. As there were no exceedances of EPA's screening level of 400 mg/kg for lead, and only one exceedance of NYSDEC's Soil TAGM for copper (100 mg/kg), it was determined that soil located at or near the surface of the site did not require remediation to protect human health or the environment. A soil boring study to evaluate the progress of bioventing in the easternmost portion of the contaminated area was conducted in August 1999 (Hunt 1999). The analytical results showed that bioventing had been successful in remediating fuel-contaminated soil above and slightly below the water table in that area (preliminary remediation goals were achieved). However, fuel-related contamination associated with residual product still remained deeper below the water table. It was concluded that, to accomplish remediation of this soil by bioventing, it would be necessary to lower the water table by pumping in this area.

Contamination addressed by the Source OU, resulting from leaching of unburned jet fuel and solvents through site soils, consists of the following: 1) free product (primarily fuel) which is floating on groundwater below the ground surface; 2) soil contamination above the water table (i.e., in the vadose zone) which is mainly confined to the area of the four former pits; 3) residual product adhering to soil in the zone of water table fluctuation (i.e., smear zone) which has resulted from the horizontal and vertical movement of product in the subsurface; and 4) groundwater contamination which has resulted from product and soil contamination. The first three elements of contamination are included in the Source OU. The fourth element, contaminated groundwater, is being addressed under the FT-002 / Industrial Area Groundwater OU. Compounds detected in subsurface soils at FT-002 at the highest levels include 1,2-dichloroethene, cis-1,2-dichloroethene, trichloroethene, toluene, ethylbenzene, total xylenes, m&p xylenes, 1,2-dichlorobenzene, and naphthalene. Soil located at the surface of the site does not require remediation to protect human health and the environment.

## **II. OPERABLE UNIT BACKGROUND**

The ROD for the FT-002 Source OU was signed in March 2001, The remedial objectives for the Source OU are as follows:

1. Cleanup contaminated soil and residual product located in the vadose zone and in the zone of water table fluctuation (smear zone) at the site to concentrations less than or equal to remediation goals set for the site to address the impact of this contamination on groundwater; and

2. Recover floating free (pumpable) product at the site to the extent practicable.

The ROD called for the upgrade and expansion of the existing technological components of the two previous removal actions. The remedy includes soil vapor extraction (SVE) at Pit 1 with treatment of the extracted air by catalytic oxidation, bioventing of contaminated site soils, free product collection, water table depression enabling remediation of residual product adhering to soil below the water table, hydraulic containment of the remaining source, institutional controls, progress monitoring and sampling, and five-year site reviews. Contaminated groundwater at the site is being addressed under the FT-002 / Industrial Area Groundwater OU.

### **III. CONSTRUCTION ACTIVITIES**

The Air Force was the lead agency for the design and construction of the remedy selected in the March 2001 FT-002 Source OU ROD. Design and construction were performed on behalf of the Air Force by URS Group Inc., through contracts with the Air Force Center For Environmental Excellence (AFCEE). URS prepared remedial design (RD) plans and specifications for the upgrade and expansion of all remedial components, which were approved by EPA and NYSDEC. The design work was completed in August 2003, and construction began in August 2003. The remedial system's construction and performance standards, including health and safety standards, were established in the RD plans and specifications. These standards addressed: groundwater extraction, free product extraction, SVE, and bioventing well depths; screen locations and pumping rates; treatment system hydraulic requirements; air stripper and catalytic oxidation performance criteria, and system performance monitoring that addressed air, liquid and hydraulic performance criteria. Each of the construction standards were monitored carefully during construction by URS with Air Force oversight to ensure compliance with all requirements. Operational performance standards, which were also established in the final RD, were monitored during performance testing, which took place for approximately three months, after nearly all systems were constructed and found to be in compliance with the requirements of the final RD.

The scope of the construction activities included the following:

- drilling and installation of two new product and groundwater recovery wells;
- modification of one groundwater recovery well to enable recovery of floating product;
- drilling and installation of three new groundwater extraction wells;
- increasing groundwater flow rates from the recovery wells;
- modifying operation of the dual purpose SVE/bioventing wells to target areas of soil contaminated by chlorinated VOCs;
- modifying operation of one product/groundwater recovery well to include bioventing;
- drilling and installing one new bioventing well;
- installing a concrete vault at the groundwater treatment system building to accommodate the new influent lines and manifold; and
- modifying the Programmable Logic Controller (PLC) system to provide control for submersible pumps in the new recovery wells.

There were no major problems or significant encounters with hazardous conditions during the course of construction.

The remedial systems consist of the following:

- 9 free product recovery wells outfitted with active floating product skimmers and pneumatic bladder pumps. Extracted product is conveyed to above ground product storage tanks located in a building at the south end of the site;
- 14 groundwater recovery wells outfitted with electric submersible pumps. Extracted groundwater is conveyed to a water treatment system located at the south end of the site;
- 14 soil vapor extraction (SVE) wells capable of operating in either SVE or bioventing mode. A catalytic oxidizer (CATOX) is used to treat extracted soil gas prior to discharge to the atmosphere.
- 14 bioventing wells capable of operation in either SVE or bioventing mode and 12 bioventing wells. Two blowers are used, with one blower serving the SVE wells and the other serving the bioventing wells;
- Groundwater treatment system. An 80 gallon per minute (gpm) water treatment system that includes flow equalization, a clarifier, air stripper, sand filter, carbon adsorption vessels, sludge settling tanks, and sludge filter press. Treated water is discharged to a permitted outfall (CERCLA IRM 001) located on an unnamed stream at the former weapons storage area.; and
- Programmable logic controller (PLC). Controls operation of the groundwater submersible pumps and provides monitoring capability for operation of the bioventing and SVE blowers. The groundwater PLC controls two slave PLCs for the bioventing and SVE blowers.

Construction of the remedial system upgrade and expansion components was completed in December 2003.

#### **IV. CHRONOLOGY OF EVENTS**

<b><u>Date</u></b>	<b><u>Event</u></b>
1984-1985	Preliminary Assessment (PA) conducted for site FT-002.
1987	Site Inspection of site FT-002 conducted.
1988-1993	Remedial Investigation (RI) for FT-002 Soil OU conducted.
1990	Engineering Evaluation/Cost Analysis (EE/CA) evaluated alternatives for recovery of free floating (pumpable) product from FT-002.
1992-1993	Removal Action for FT-002 Source OU to recover free product constructed and operation begun.



<u>Date</u>	<u>Event</u>
1995	Feasibility Study (FS) conducted to determine long term remedy for the FT-002 Source OU.
1996-1998	Second Removal Action to address contaminated soil (1996 Action Memo). Soil Vapor Extraction (SVE), Bioventing, and water table depression systems designed and constructed and operation begun. Free product removal and groundwater treatment systems upgraded.
1998	Copper and lead surface soil sampling conducted.
August 1999	Bioventing Progress Evaluation (soil boring program).
March 2001	ROD for cleanup of FT-002 Source OU signed.
2001-2002	Remediation Progress Soil Boring and Sampling program.
2003	Remedial System Upgrade and Expansion Plan.
December 15, 2003	Construction of remedial system upgrades and expansion completed.
January 12, 2004	Initial operation of FT-002 Source OU remedy begun.
March 23, 2004	Final inspection completed and system approved for FT-002 Source OU (OU 5) remedy.

The following is a chronology of remedial construction activities for the FT-002 Source OU free product removal, SVE, bioventing, water table depression, and groundwater treatment facilities, which are currently being used to cleanup the OU 5 contaminated soil:

- August 2003: System design completed by URS Inc., and approved by EPA and NYSDEC. Contract awarded to URS Inc.
- December 2003: Construction completed.
- December 2003 through January 2004: Operational testing conducted.
- January 2004: Continuous system operation commenced.
- March 2004: Final inspection completed and system approved.

## **V. PERFORMANCE STANDARDS AND CONSTRUCTION QUALITY CONTROL**

The RD plans and specifications for the RA were carefully reviewed by EPA and NYSDEC for compliance with all requirements of the ROD, and all applicable Quality Assurance and Quality Control (QA/QC) procedures and protocols. SVE, bioventing, free product recovery, and

groundwater extraction wells and treatment systems were monitored during startup. Air and water quality data were collected to evaluate the effectiveness of the CATOX and groundwater treatment system to ensure that the quality of the influent was similar to that which was anticipated, and to monitor the effects of blowing and extracting air and pumping groundwater. The water levels in various wells were also measured daily to monitor the decline in water levels imposed by the pumping. Sampling was also performed in SVE, bioventing, product recovery, and groundwater extraction wells, treatment system effluent, and monitoring wells. Samples of treatment system influent and effluent were tested for VOCs and samples of groundwater treatment system influent and effluent were also tested for general chemistry parameters including manganese, iron, TDS, TSS, TOC, pH and alkalinity. The results indicate that effluent quality meets discharge requirements.

The QA/QC program utilized through the RA was sufficiently rigorous and was adequately complied with to enable EPA and NYSDEC to determine that the analytical results reported were accurate to the degree needed to assure satisfactory execution of the RA, consistent with the ROD, and the RD plans and specifications.

## **VI. FINAL INSPECTION AND CERTIFICATION THAT REMEDY IS OPERATIONAL AND FUNCTIONAL**

During remedial action activities, field observations were conducted by EPA and NYSDEC. An inspection of the free product removal, SVE, bioventing, water table depression, and groundwater treatment systems, OU 5, was conducted by EPA and NYSDEC on March 23, 2004.

Based on the field observations associated with the inspection conducted by EPA and NYSDEC, it has been determined that construction of the FT-002 Source OU free product removal, SVE, bioventing, water table depression, and groundwater treatment systems, OU 5, has been completed and that the remedial activities conform with the remedy selected in the March 2001 ROD.

## **VII. OPERATION & MAINTENANCE**

Air and groundwater monitoring and treatment system effluent monitoring are ongoing activities at the Site. This sampling provides information to evaluate the operation of the system. Samples of treatment system influent and effluent are collected regularly and submitted for analysis of VOCs, metals and general chemistry parameters including chlorides, manganese, iron, BOD<sub>5</sub>, TSS, pH and alkalinity. These data will aid in assessing treatment system performance over time.

Monitoring points consist of several SVE, bioventing, product recovery, and groundwater extraction wells, selected monitoring wells, the air stripper, and CATOX unit. The effluent from the air stripper and CATOX units are sampled monthly and the SVE, bioventing, product recovery, groundwater extraction wells, and selected monitoring wells are sampled on a quarterly

basis. Sampling parameters include trans-1,2-dichloroethene, trichloroethene, 1,1,1-trichloroethane, ethylbenzene, acetone, benzene, 1,1-dichloroethane, methylene chloride, xylenes, vinyl chloride, arsenic, chromium, lead, manganese, chlorides, iron, TDS, TSS, pH and alkalinity.

Periodic checks of well pump operation and recorded measurements of output and the volume of water pumped from the groundwater extraction wells are required during system operation. Pumpage data are recorded on log sheets and are maintained at the Site. Periodic checks of SVE and bioventing blower and extraction operation and recorded measurements of output and the volume of air pumped from the SVE and bioventing wells are required during system operation.

#### **VIII. SUMMARY OF PROJECT COSTS**

The original capital cost estimate to implement the remedial action described in the ROD (upgrade and expansion of the existing removal action systems) was \$550,000. The actual capital cost was \$412,400. The operational and maintenance (O&M) cost estimate in the ROD for the first year was \$400,000. The annual O&M cost for the first year is now expected to be approximately \$417,000, based on 2004 contract data.

#### **IX. OBSERVATIONS AND LESSONS LEARNED**

Several rounds of design sampling and review were needed prior to preparation of the remedial design report. As a result, the design process took a significantly longer period of time than anticipated.

#### **X. OPERABLE UNIT CONTACT INFORMATION**

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